

1. A discrete electro-mechanical device, comprising:
a structure including an electrically-conductive trace;
a defined patch of nanotube fabric disposed in spaced relation to the trace; and
wherein the defined patch of nanotube fabric is electromechanically deflectable between
a first and second state, wherein in the first state the nanotube article is in spaced
relation relative to the trace, and wherein in the second state the nanotube article
is in contact with the trace; and
a low resistance signal path in electrical communication with the defined patch of
nanofabric.
2. The discrete electro-mechanical device of claim 1 wherein the low resistance signal path
is a metal signal path in contact with the defined patch of nanotube fabric.
3. The discrete electro-mechanical device of claim 1 wherein the structure includes a
defined gap into which the electrically conductive trace is disposed, wherein the defined gap has
a defined width, and wherein the defined patch of nanotube fabric spans the gap and has a
longitudinal extent that is slightly longer than the defined width of the gap.
4. A discrete electro-mechanical device, comprising:
a structure including a first and second electrically-conductive trace disposed
substantially parallel to one another and in a spaced relation relative to one
another;
a defined patch of nanotube fabric disposed between the first and second trace and
extending substantially perpendicular to the first and second traces, wherein the
defined patch of nanotube fabric is electromechanically deflectable into contact
with at least one of the first and second traces in response to electrical stimulation
of at least one of the first and second traces relative to the defined patch of
nanotube fabric; and

a low resistance signal path in electrical communication with the defined patch of nanofabric.

5. The discrete electro-mechanical device of claim 4 wherein the low resistance signal path is a metal signal path in contact with the defined patch of nanotube fabric.

6. The discrete electro-mechanical device of claim 4 wherein the structure includes a defined gap into which one of the electrically conductive trace is disposed, wherein the defined gap has a defined width, and wherein the defined patch of nanotube fabric spans the gap and has a longitudinal extent that is slightly longer than the defined width of the gap.

7. A device, comprising:

a structure defining a gap having a gap width;

a defined segment of nanotube fabric, disposed on the structure and spanning the gap, the nanotube fabric segment including a plurality of nanotubes, at least some of said nanotubes having a length in excess of the gap width; and

a clamp, disposed at each of two ends of the nanotube fabric segment and disposed over at least a portion of the nanotube fabric segment substantially at the edges defining the gap.

8. The device of claim 7, wherein the clamp is made of electrically-conductive material.

9. The device of claim 7, wherein the clamp is made of electrically-insulative material having a via therethrough filled with electrically conductive material to provide an electrical communication path with the nanotube fabric segment.

10. The device of claim 9 wherein the via is filled with metal to provide a metallic signal path to the nanotube fabric segment.

11. The device of claim 9 wherein the nanotube fabric segment is made of a nanofabric having a porosity and wherein the electrically conductive material filling the via also fills at least some of the pores of the of the nanotube fabric segment.
12. The device of claim 7, wherein the nanotube fabric segment has a lithographically-defined shape.
13. The device of claim 7, further comprising an electrically-conductive trace disposed in the gap and being in spaced relation with the nanotube fabric segment.
14. The device of claim 7 wherein the clamp is a structure defining a second gap above the nanotube fabric segment and wherein the gap and the second gap each have respectively a conductive trace disposed therein.
15. The device of claim 7 wherein the nanotube fabric segment is made of a nanofabric having a porosity and wherein the clamp is made of material that fills at least some of the pores of the of the nanotube fabric segment.
16. The device of claim 7 further including at least one electrically conductive trace in spaced relation relative to the nanotube fabric segment and wherein the nanotube fabric segment is electromechanically deflectable into contact with trace in response to electrical stimulation of the trace and nanotube fabric segment.
17. The device of claim 16 wherein the contact with the trace is a non-volatile state.
18. The device of claim 16 wherein the contact with the trace is a volatile state.
19. The device of claim 16 wherein the at least one electrically conductive trace has an interface material to alter the attractive force between the nanotube fabric segment and the electrically conductive trace.

20. A method for making a device, comprising:
providing a structure having a gap of defined width;
forming a region of sacrificial material in the gap;
forming a nanotube fabric segment over the structure and region of sacrificial material;
at each end of the nanotube fabric segment providing a clamp over at least part of the
nanotube fabric segment substantially at the edges defining the gap; and
removing the region of sacrificial material so that the nanotube fabric segment is
suspended over and spanning the gap, clamped at each end of the article.
21. The method of claim 20 wherein the defined length of the nanotube fabric segment
slightly exceeds the width of the gap.
22. The method of claim 20 wherein the clamp is formed of insulative material.
23. The method of claim 20 wherein the clamp is formed of electrically conductive material.
24. The method of claim 20 wherein forming the nanotube fabric segment includes forming a
matted fabric of nanotubes and removing a portion of the fabric to yield the nanotube fabric
segment.
25. The method of claim 24 wherein removing a portion of the fabric includes
lithographically patterning and etching the fabric.
26. The method of claim 20 wherein the nanotube fabric segment is made of a porous
nanofabric and wherein providing the clamp includes providing material that fills at least some
of the pores of the nanotube fabric segment.
27. The method of claim 20, wherein the clamp is made of electrically-insulative material
and the clamp is provided with a defined via therethrough, and wherein the method further

includes filling the via with electrically conductive material to provide an electrical communication path with the nanotube fabric segment.

28. The method of claim 27 wherein the via is filled with metal to provide a metallic signal path to the nanotube fabric segment.

29. The method of claim 27 wherein the nanotube fabric segment is made of a nanofabric having a porosity and wherein the electrically conductive material filling the via also fills at least some of the pores of the of the nanotube fabric segment.

30. The method of claim 20, further comprising providing an electrically-conductive trace in the gap so as to be disposed under the region of sacrificial material.

31. The method of claim 20 wherein providing the clamp includes forming a structure defining a second gap above the nanotube fabric segment and wherein the method includes providing an electrically-conductive trace in the gap and the second gap.